Electron-Spin Relaxation in an Antiferromagnetic

that low temperatures for which the calculations were carried out $W_{c-e} \sim 10^{8}/T$. Details of these calculations will be given in a subsequent paper.

(Note: This is a complete translation)

ASSOCIATIONS: Ural'skiy gosudarstvennyy universitet imeni A.M.Gor'kogo (Ural State University imeni A. M. Gor'kiy) and Baku,universitet (Baku University)

SUBMITTED: January 12, 1958

24.2200

6693

AUTHORS: Seidov, Yu. and Berdyshev, A. SOV/126-8-1-20/25

TITLE: Spin-electron Relaxation in Antiferromagnetics

PERIODICAL: Fizika metallov i metallovedeniye, 1959, Vol 8, Nr 1, pp 147-150 (USSR)

ABSTRACT: If the system of spin waves of a ferromagnetic is in some way brought out of the thermal equilibrium state, it may re-establish this state via one of the following three basic mechanisms:
1) interaction of the spin waves with each other;
2) interaction of spin waves with phonons;
3) interaction of spin with conduction electrons.
The first two mechanisms were considered by Tsukernik (Ref 1). The present paper is concerned with the third mechanism. The calculation is based on the s-d-exchange model put forward by Vonsovskiy et al. in Refs 2 and 3. The energy operator is taken in the form of Eq (1), where $J(\vec{n}_1, \vec{n}_2)$ is the d-d-exchange integral, $J(\vec{n}_1, \vec{n}_2) < 0$, $I(\vec{k}_1, \vec{k}_2)$ is the interaction integral for the d-electron with states $\vec{k}_1$ and $\vec{k}_2$ of the conduction electrons, $a_{n\sigma}$ and $a_{k\sigma}$ are the Fermi

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operators. The transition from the Fermi amplitudes $a_{n\sigma}$ to the spin operators and then to the b_n operators in the Ziman formalism (Ref 5) may be carried out using Eqs (2), where $\vec{w}$ is the reciprocal lattice vector so that $e^{i\vec{w}\vec{n}}$ is equal to +1 at the sites of one sublattice and -1 at the sites of the other. The d-part of the operator given by Eq (1), H_{dd}, is the same as that in Eq (24) in Ref 5. The eigenvalues of H_{dd} are the same as Ziman's eigenvalues. The substitution for the diagonalization of H_{dd} is given by Eq (3), where the symbols are defined by Eq (4), and the ξ_μ are the Bose operators, $\langle h \rangle$ denotes summation over nearest neighbours, $\sigma_h = e^{i\vec{w}\vec{h}}$, H_a is the anisotropic magnetic field and E_μ is the energy of a spin wave with a wave vector μ and $H = 0$. The sum of the operators representing the energy of the conduction electrons and the energy of the s-d-exchange interaction consists of two parts, the first of which is given by Eq (5) and describes the translational energy of the conduction electrons

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"magnetized" by the spin wave field. Eq (5) may be diagonalised in the same way as H_{dd}. As a result, it turns out that the levels of s-electrons split into two sub-bands and the gap between them is proportional to the magnetization of the sub-lattices. However, this effect is not considered and an estimate is made only of the effect of the s-d-exchange interaction with free conduction electrons. This interaction is described by the second part of the s-d-exchange interaction operator (Eq 6). Substituting Eq (6) into Eq (3) one obtains an operator which describes inelastic collisions of conduction electrons with spin waves in which one spin wave is either emitted or absorbed during each separate collision. The change in the number of spin waves per unit time can then be found in the usual way (Ref 7) and is given by the last equation on p 148, where n_k is the Fermi distribution function and n_μ is the Bose distribution function. The average relaxation time can then be shown to be given by Eq (7). It is shown that as a rough estimate this formula may be replaced by $w_{c-s} \approx 10^8/T$.

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66903
SOV/126-8-1-20/25

Spin-electron Relaxation in Antiferromagnetics

There are 8 figures and 8 references, 7 of which are Soviet and 1 English.

ASSOCIATION: Ural'skiy gosudarstvennyy universitet imeni A. M. Gor'kogo (Urals State University imeni A.M.Gor'kiy)

SUBMITTED: July 26, 1958

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24.2200

66219

SOV/126-8-3-2/33

AUTHORS: Berdyshev, A. A. and Karpenko, B. V.

TITLE: On the Role of Indirect Interaction in the Theory of the Magnetism of Transition Metals and Rare Earths. 1. Ferromagnetism

PERIODICAL: Fizika metallov i metallovedeniye, 1959, Vol 8, Nr 3, pp 330-336 (USSR)

ABSTRACT: Usually the ferro and antiferromagnetism of transition metals is explained by the exchange interaction between the electrons of inner d-shells. If the exchange interaction integral between nearest neighbours is positive, then the metal is a ferromagnetic, while if it is negative the metal is antiferromagnetic. Such a treatment of magnetic properties meets with a number of difficulties. A large group of experimental data cannot be explained with the aid of the Bethe-Slater curve for the exchange integral of transition metals (Ref 1). Moreover, the majority of theoretical estimates of the exchange integral gives it a negative sign (Ref 2). Secondly, it has recently been found (Ref 3) that diluted alloys of manganese with noble metals are either ferro or antiferromagnetics. In these alloys the atoms

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On the Role of Indirect Interaction in the Theory of the Magnetism of Transition Metals and Rare Earths. 1. Ferromagnetism

of the transition metal are at such large distances from each other that direct exchange coupling between them is entirely excluded. Similarly, ferro and antiferromagnetism of rare earth metals cannot be explained by unusually weak direct coupling between magnetically active electrons. These considerations have led to a search for other possible mechanism of exchange coupling. One of such mechanisms is the indirect exchange interaction suggested by Zener (Ref 1). The present work is concerned with the effect of indirect interaction in the ferromagnetic problem. The theory is based on the s-d-exchange model of transition metals put forward by Vonsovskiy, his coworkers, and Berdyshev (Refs 4, 5). The Hamiltonian which describes the interaction between conduction electrons and spin waves in a ferromagnetic is given by Eqs (1) and (2) (Ref 4). In these equations $E_k = Ak^2$ is the translational energy of a conduction electron, A is the transport integral, $\epsilon_g = Jg^2$ is the energy of a spin wave, $\vec{k}$ and $\vec{g}$ are the wave numbers of

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the electron and the spin wave (in units of the lattice constant), J is the d-d-exchange integral, $I(\vec{k}_1, \vec{k}_2)$ is the s-d-exchange integral, a_k and $a_k(-)$ are the Fermi operators in the second quantization theory for conduction electrons with wave number $\vec{k}$ and spin components +1/2 and -1/2 respectively, b_g are the Bose operators and N is the number of lattice sites. In previous papers on the s-d-exchange model (Refs 4 and 5) only the H_o and H_2 components were taken into account which corresponds to taking into account in the energy first order corrections of the perturbation theory. The contribution due to the "triple" terms in the energy spectrum was not considered and it is the aim of the present work to elucidate the effect of these terms on the energy of the system and its magnetization. It is shown that the second approximation of the perturbation theory on the s-d-exchange model of transition metals leads to the appearance of an indirect interaction between d-electrons. When this interaction is taken into account the existence of ferromagnetism becomes possible in the

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case of complete absence of direct coupling or even negative d-d-exchange integral. An expression is derived for the d-d-exchange integral and this is given by Eq (11). From this expression it can be seen that in the present theory the energy of the spin wave is considerably altered in comparison with the exchange model. Firstly, the second order correction of the energy has led to the replacement of the integral of direct d-d-exchange coupling by a certain effective integral whose magnitude depends on the Fermi energy and the transport integral for conduction electrons. Secondly, the effective exchange integral is not very dependent on temperature. Finally, the second order correction of the energy completely cancels the effect of the first order correction so that the "zero" energy Δ_o, which was considered earlier in Refs 4 and 5, is completely absent in the spin wave energy. This means that the spontaneous magnetization of d-electrons follows the $T^{3/2}$ law in contradiction to the results obtained in Refs 4 and 5 and this is entirely due

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to the fact that the second order correction to the energy completely cancels the first order correction. There are 8 references, 3 of which are Soviet and 5 English.

ASSOCIATION: Ural'skiy gosudarstvennyy universitet imeni A.M.Gor'kogo (Ural's State University imeni A. M. Gor'kiy)

SUBMITTED: August 6, 1958

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21(8)

AUTHORS: Berdyshev, A. A., Karpenko, B. V. SOV/56-36-3-24/71

TITLE: On the Indirect Interaction of d-Electrons of Transition Metals (O kosvennom vzaimodeystvii d-elektronov perekhodnykh metallov)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 36, Nr 3, pp 819-822 (USSR)

ABSTRACT: The ferro- and antiferromagnetism of transition metals can be explained by the exchange interaction between the electrons of the internal d-shells of the atoms. The theoretical treatment of this problem by means of the exchange interaction integral meets with a number of difficulties (Ref 1). Thus, firstly, the large group of experimental data cannot be explained by the Bethe-Slater (Bete, Sleyter) curve for the exchange interaction integral of transition metals. Secondly, the majority of theoretical estimates of this integral leads to a negative sign (antiferromagnetic)(Ref 2), and, thirdly, diluted alloys of manganese with noble metals show ferro- or antiferromagnetism (Ref 3). In view of the fact that by means of this theory it is apparently not possible to describe these phenomena correctly, it is necessary to search for another form of

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representing the exchange interaction; the present paper makes a contribution in this direction. Zener (Ziner)(Ref 1) suggested the form of indirect exchange interaction which he investigated phenomenologically; the present paper uses it for the purpose of dealing with the ferromagnetic problem. The s-d model of the transition metals is treated on the basis of the perturbation theory in second approximation; this leads to indirect interaction between the d-electrons in which the conductivity electrons are involved. Thus, ferromagnetism would occur only if either s-d-coupling is completely absent ($J_{sd}=0$ for rare earths and diluted manganese solutions) or also if J_{dd} assumes a negative value. The conditions for ferromagnetism can be represented in the general form $J_{eff} = J + J^{(s)} > 0$.

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The effective exchange integral is found to be only weakly temperature-dependent, i.e. it becomes smaller with rising temperature. The authors finally thank S. V. Vonsovskiy and Ye. A. Turov for discussions and remarks. There are 8 references, 3 of which are Soviet.

ASSOCIATION: Ural'skiy gosudarstvennyy universitet (Ural State University)

SUBMITTED: August 5, 1958 (initially) and January 14, 1959 (after revision)

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30211
S/126/60/009/04/001/033
E032/E435

24.2200

AUTHORS: Karpenko, B.V., Berdyshev, A.A., Zaks, R.B. and Noskova, L.M.

TITLE: The Role of Indirect Exchange Interaction in the Theory of the Magnetism of Transition Metals and Rare Earths II. Antiferromagnetism

PERIODICAL: Fizika metallov i metallovedeniye, 1960, Vol 9, Nr 4, pp 481-487 (USSR)

ABSTRACT: In the previous paper (Ref 1) a study was made of the indirect interaction between d-electrons in the ferromagnetic problem. It was shown that the indirect interaction between electrons in inner and incompletely filled shells, in the atoms of transition metals and rare earths, favours the formation of a ferromagnetic state. In the present paper an estimate is made of the role of indirect interaction in setting up antiferromagnetic order. The Hamiltonian for an antiferromagnetic, according to the s-d exchange model put forward by Vonsovskiy (Ref 2), is of the form shown on p 481 where a_k and $a_k(-)$ are the Fermi second quantization operators for electrons with the momentum k and right

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and left spin orientations respectively, S_n is the spin operator for the n-th lattice site, J is the d-b exchange integral for two nearest neighbors, I is the s-d exchange integral (assumed independent of the momentum of conduction electrons), V is the volume of the system, $E_k = Ak^2$ is the energy of a conduction electron, A is the transport integral (Ref 3) and $S = 1/2$. The spin operators can be related to the Bose operators by the two equations at the bottom of p 481 and top of p 482. The Hamiltonian obtained in this way is shown at the top of p 482 where z is the number of nearest neighbors for a given atom,

$$\gamma_\lambda = \frac{1}{z} \sum_{\rho} e^{i\rho\lambda} ,$$

and ρ is the radius vector from the atom to its nearest neighbor atom. After diagonalization, the Hamiltonian can be thrown into the form shown at the bottom of p 482 where ε_λ and $g(\lambda)$ are defined by the

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The Role of Indirect Exchange Interaction in the Theory of the Magnetism of Transition Metals and Rare Earths II. Antiferromagnetism

relations at the bottom of p 482. The energy of the system in an external magnetic field, the free energy and the magnetization are then calculated in a way similar to that employed in the previous paper (Ref 1). It is shown that if the interaction of spin waves with conduction electrons is taken into account, then the interaction between d-electrons is characterized not by the d-d exchange integral but by a certain effective exchange integral J_{eff} which is given by Eq (6), in which ζ is the chemical potential of the conduction electrons. It follows from this equation that in the absence of direct d-d exchange interaction, the integral J_{eff} is negative, which means that the energy of the spin wave also becomes negative and an antiferromagnetic state cannot be reached. It is concluded that indirect exchange interaction in general favours ferromagnetism and this agrees with Zener's hypothesis. The electronic specific heat of transition metals is also affected by indirect interaction. The interaction of conduction electrons with spin waves in

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The Role of Indirect Exchange Interaction in the Theory of the Magnetism of Transition Metals and Rare Earths II. Antiferromagnetism

ferro and antiferromagnetics introduces an extra turn into the specific heat equation. It is suggested that by separating out the linear term in the experimental determination of the specific heat of a dilute alloy and by comparing it with the corresponding linear term in the specific heat equation for a pure metal, it may be possible to estimate the magnitude of the exchange integral I. There are 8 references, 2 of which are Soviet, 1 German in Russian translation and 5 English.

ASSOCIATION: Ural'skiy gosudarstvennyy universitet im. A.M.Gor'kogo (Ural State University imeni A.M.Gor'kiy)

SUBMITTED: January 25, 1959

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85018

9.4300 (1137, 1138, 1143)

S/126/60/010/004/020/023
E032/E314

AUTHORS: Berdyshev, A.A. and Vlasov, I.N.

TITLE: Resistivity of an Antiferromagnetic

PERIODICAL: Fizika metallov i metallovedeniye, 1960, Vol. 10, No. 4, pp. 628 - 629

TEXT: Kasuya and Mannavi (Ref. 1) have calculated the electrical resistivity of an antiferromagnetic transition metal at low temperatures, assuming that the interaction energy between conduction electrons and spin waves is constant. It is shown in the present paper that the results obtained by these authors can also be obtained (and in fact were obtained earlier - Ref 2) by the s-d exchange model of Vonsovskiy et al. In a later paper Berdyshev et al (Ref. 3) obtained the exact form of the energy operator for an antiferromagnetic (Eq. 2). Using this operator it can be shown that the "magnetic" part of the resistivity is given by:

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$$\rho_{\mu} = \frac{13.5\pi m^2 I^2}{h^2 e^2 N z^5 / 2 J^5 k F^2} (kT)^5 \qquad (4)$$

(in the absence of anisotropy). This expression is different from that obtained by Kasuya and Mannavi (Ref. 1). The reason for this difference is that Kasuya and Mannavi used an approximate form for the interaction potential while the present authors used an exact form. There are 7 references: 2 English, 1 Russian translation from German and 4 Soviet.

ASSOCIATION: Ural'skiy gosudarstvennyy universitet im. A.M. Gor'kogo (Ural State University im. A.M. Gor'kiy)

SUBMITTED: January 15, 1960

Card 2/2

82423

S/056/60/038/03/24/033
B006/B014

24.2200

AUTHORS: Karpenko, B. V., Berdyshev, A. A.

TITLE: Indirect Interaction of d-Electrons in Transition Metals. II. Antiferromagnetism

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 38, No. 3, pp. 925-928

TEXT: In continuation of a previous paper (Ref. 1) in which the necessity of investigating the indirect interaction between electrons of unfilled inner atomic shells of transition metals (d-electrons) and rare earths (f-electrons) has been pointed out, the present paper describes a study of the role played by indirect interaction between d-electrons in connection with the antiferromagnetic state. The ansatz for the Hamiltonian of an antiferromagnetic body in the s-d exchange model, on which the theoretical study is based, was taken from a paper by S. V. Vonsovskiy (Ref. 2). The investigation is carried out by perturbation-theoretical methods. Contrary to what was done in Ref. 1, the perturbation theory is not applied to an arbitrarily chosen spectrum, but to a certain unperturbed

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Indirect Interaction of d-Electrons in Transition Metals. II. Antiferromagnetism

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B006/B014

energy level. Next, the authors study the correction to the elementary excitation energy of the Bose branch $\varepsilon(\lambda)$, which results from interaction terms, and an expression for the spin-wave energy $\tilde{\varepsilon}(\lambda)$ is exactly derived including second-order terms. Ansatz (2) is transformed several times, and finally one obtains (3). The latter expression is analysed for two limiting cases: The first case corresponds to an approximation in which the energy of virtual electron transitions is considerably smaller than the energy of the corresponding spin waves. The second case corresponds to an approximation in which the energy of virtual electron transitions is considerably higher than the energy of the corresponding spin waves. In either case, the effective exchange integral is reduced by indirect exchange. If there is no direct d-d exchange coupling ($J = 0$) present, this integral becomes negative and no antiferromagnetic effect is observable. This fact is finally discussed in great detail. The author thanks L. Ya. Kobelev for his valuable advice. There are 3 references, 2 of which are Soviet.

ASSOCIATION: Ural'skiy gosudarstvennyy universitet (Ural State University)

SUBMITTED: September 12, 1959

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S/020/60/132/04/17/064
B014/B007

AUTHORS: Vonsovskiy, S. V., Corresponding Member of the AS USSR, Berdyshev, A. A., Izyumov, Yu. A., Karpenko, B. V., Polyak, Yu. Ya.

TITLE: Exchange Interaction of Inner and Outer Electrons in Transition Metals

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 132, No. 4, pp. 797-800

TEXT: In the electron spectrum of metallic crystals which are composed of elements of the transition group and of the rare-earth group, special properties are observed compared to the crystals of other metals. This is brought into connection with the d- and f-shells of the electron sheath. The electron density of the transition metals is divided into three regions. The first is near the nucleus, the second consists of the valence electrons, and the third intermediate region consists of the electrons of the non-closed shells. For this system the Hamiltonian (1) is written down. The present paper describes the influence exerted by the non-diagonal terms in (1) upon the development of the exchange coupling, i.e., on the

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spectrum of the d- and s-electrons. For this purpose the authors use the statistical Green function developed by N. N. Bogolyubov and S. V. Tyablikov (Ref. 7). The development of the distribution functions of the Bose- and Fermi particles is dealt with in detail, and formulas (11) and (12) are obtained. As turned out in the course of a further investigation, the exchange interaction between the outer and inner electrons leads to an exchange coupling between the inner electrons. As may be seen from formulas (18) and (19), this interaction has the character of a ferromagnetic coupling. If a direct d-d exchange of the inner electrons is lacking, this leads to ferromagnetism. Indirect interaction by conduction electrons leads only to the renormalization of the exchange integral and does not change the energy spectrum of the spin waves. Ye. A. Turov, Pu Fu-cho, T. Shiklosh, and D. N. Zubarev are mentioned. There are 9 references, 6 of which are Soviet.

ASSOCIATION: Institut fiziki metallov Akademii nauk SSSR (Institute of Metal Physics of the Academy of Sciences, USSR), Ural'skiy gosudarstvennyy universitet im. A. M. Gor'kogo (Ural State University imeni A. M. Gor'kiy)

Exchange Interaction of Inner and Outer Electrons in Transition Metals

S/020/60/132/04/17/064
B014/B007

SUBMITTED: February 8, 1960

VC

Card 3/3

BERDYSHEV, A.A.; KOREH, E.D.

Exchange interaction of internal and external electrons of transition metals. Fiz. met. i metalloved. 12 no.4:476-479 O '61. (MIRA 14:11)

1. Ural'skiy gosudarstvennyy universitet imeni A.M. Gor'kogo.
(Ferromagnetism)
(Free electron theory of metals)

KARPENKO, B.V.; BELOUSHEV, A.A.

Exchange interaction through current carriers in ordered semiconducting magnetic materials. Fiz. tver. tela 5 no.10:3026-3028 O '63. (MIRA 16:11)

1. Institut fiziki metallov AN SSSR i Ural'skiy gosudarstvennyy universitet im. A.M. Gor'kogo, Sverdlovsk.

KARPENKO, B.V.; BERDYSHEV, A.A.

Indirect exchange interaction via current carriers in semiconductors.
Fiz. tver. tela 5 no.12:3397-3405 D '63. (MIRA 17:2)

1. Ural'skiy gosudarstvennyy universitet imeni A.M.Gor'kogo, Sverdlovsk.

L 30341-66 EWT(1)/T IJP(c) AT

ACC NR: AP6015454 (A) SOURCE CODE: UR/0181/66/008/005/1382/1389

AUTHOR: Berdyshev, A. A.

ORG: Ural State University im. A. M. Gor'kiy, Sverdlovsk (Ural'skiy gosudarstvennyy university)

TITLE: Ferromagnetic semiconductors with exchange bonding by conduction electrons

SOURCE: Fizika tverdogo tela, v. 8, no. 5, 1966, 1382-1389

TOPIC TAGS: semiconducting material, ferromagnetic material, photomagnetic effect, conduction electron

ABSTRACT: The author discusses the possibility of a new (photoferromagnetic) effect in a certain class of antiferromagnetic and paramagnetic semiconductors. It is assumed that a specimen in this class is exposed to a strong source of light at a given temperature below the transition point (i. e. in the antiferromagnetic state). If there is a significant photoconductive effect, there should be a transition from the antiferromagnetic to the ferromagnetic state or at worst a weakening of the antiferromagnetic bond which would show up in a reduction in the Neel point of the illuminated specimen as compared with a specimen located in the dark. The molecular field method is used for a qualitative analysis of the magnetic properties of a purely semiconductive ferromagnetic material in which conduction electrons form the exchange bond

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ACC NR: AP6015454

between the spins of the magnetically active atoms. It is shown that the region of ferromagnetism in this type of ferromagnetic material would be bounded by the upper and lower Curie points and that paramagnetic susceptibility would conform to laws other than those observed in ordinary ferromagnetic materials. Various classes of dielectric and semiconductor compounds which may have the theoretically predicted photomagnetic effects and which may display the given type of ferromagnetism are discussed. These include compounds of the $Li_xMn_{1-x}Se$ type, mixed-cation compounds of the M_1M_2A type where M_1 and M_2 are two different ions of the transition group and A is an anion, and mixed-anion compounds of the MA_1A_2 type where A_1 and A_2 are two different anions from the nitrogen and oxygen groups and M is an ion of the transition group, e. g. MnS_xP_{1-x}. Orig. art. has: 1 figure, 19 formulas. [14]

SUB CODE: 20/ SUBM DATE: 13Sep65/ ORIG REF: 003/ OTH REF: 008/
ATD PRESS: 5016

Card 2/2

BERDYSHEV, A. P.

"A. T. Bolotov, Selected Works on Agronomy, Fruit-Growing, Forestry and Botany. Article and Commentaries by I. M. Polyakov, Corr. Mem., Akad. Nauk, U.S.S.R. and A.P. Berdyshev, Editors." (p. 82) by Baranov, P. A. and Lebedev, D. V.

SO: JOURNAL OF GENERAL BIOLOGY (Zhurnal Obshchey Biologii) Vol. XIV, No.1 (January - February) 1953.

BERDYSHEV, G. D.: Master Med Sci (diss) -- "Ionizing irradiation of vitamin B. Material on the study of the metabolism and action of vitamin B-12 in radiation disease". Tomsk, 1958. 13 pp (Tomsk State Med Inst), 200 copies (KL, No 6, 1959, 142)

BERDYSHEV, G.D.

The effect of vitamin B_{12} on the blood of normal and of irradiated animals. Probl. gemat. i perel. krovi 3 no.5:9-14 S-O '58. (MIRA 11:11)

1. Iz kafedry biologii (Zav. - prof. V.V. Reverdato) i kafedry patofiziologii (zav. - prof. D.I. Gol'dberg) Tomskogo meditsinskogo instituta.

(VITAMIN B_{12}, effects on hemopoiesis in normal & in x irradiated guinea pigs & mice (Rus))

(ROENTGEN RAYS, effects on hemopoiesis in guinea pigs & mice, influence of vitamin B_{12} admin. (Rus))

(HEMOPOIESIS, effect of drugs on vitamin B_{12} on normal & on x-irradiated guinea pigs & mice (Rus))

BERDYSHEV, G.D.

Study of the vitamin B_{12} content and its resorption and deposition in the liver in radiation sickness. Probl.gemat. i perel. krovi 4 no.3:10-13 Mr '59. (MIRA 12:6)

1. Iz kafedry biologii (zav. - zasluzhennyy deyatel' nauki prof. V.V.Reverdatto) i kafedry patofiziologii (zav. - prof. D.I.Gol'dberg) Tomskogo meditsinskogo instituta.

(ROENTGEN RAYS, inj. eff.
radiation sickness, eff. on vitamin B_{12} metab. by liver in animals (Rus))
(VITAMIN B_{12}, metab.
liver, in radiation sickness in animals (Rus))
(LIVER, metab.
vitamin B_{12}, in radiation sickness in animals (Rus))

BERDYSHEV, Gennadiy Dmitriyevich; LANDAU, S.P., red.; SKNCHILO, K.K., tekhn.red.

[Ionising radiation and vitamins; survey of the problem and the author's research on vitamin B_{12}] Ioniziruiushchie izlucheniia i vitaminy; obzor problemy i sobstvennye issledovaniia s vitaminom B_{12}. Moskva, Gos.izd-vo med.lit-ry, 1960. 137 p. (MIRA 13:9)

(RADIATION SICKNESS) (VITAMINS)

BERDYSHEV, G.D.; SIPLIVINSKIY, V.N.; SHALINA, L.V., red.; LOKSHINA, O.A., tekhn. red.

[First Siberian professor of botany Korzhinskii; on the 100th anniversary of his birth] Pervyi sibirskii professor botaniki Korzhinskii; k 100-letiiu so dnia rozhdeniia. Novosibirsk, Izd-vo Sibirskogo otd-niia AN SSSR, 1961. 86 p. (MIRA 15:7)
(Korzhinskii, Sergei Ivanovich, 1861-1900)

BERDYSHEV, Gennadiy Dmitriyevich; ALEKSANDROVSKIY, B.M., red.; OVCHINNIKOVA, T.K., tekhn. red.

[The longevity problem in Siberia and the Far East] Problema dolgoletiia v Sibiri i na Dal'nem Vostoke. Novosibirsk, Izd-vo Sibirskogo otd-niia AN SSSR, 1963. 77 p. (MIRA 16:12)

(Soviet Far East—Longevity) (Siberia—Longevity)

BERDYSHEV, Gennadiy Dmitriyevich, kand. med. nauk; RATNER, Vadim Aleksandrovich; SALGANIK, R.I., kand. biol. nauk, red.; IVANNIKOV, B.F., red.

[Code of heredity] Kod nasledstvennosti. Novosibirsk, Novosibirskoe knizhnoe izd-vo, 1963. 85 p.
(MIRA 17:5)

1. Nauchnyye sotrudniki Instituta tsitologii i genetiki Sibirskogo otdeleniya AN SSSR (for Berdyshev, Ratner).

BERDYSHEV, G.D.; SIFLEVINSKIY, V.N.; SHALINA, L.V., red.

[V.V.Sapozhnikov, prominent Siberian scholar and traveler] Vydaiushchiisia Sibirskii uchenyi i puteshestvennik V.V. Sapozhnikov. Novosibirsk, Red.-izdatel'skii otdel Sibirskogo otd-niia AN SSSR, 1964. 133 p. (MIRA 17:8)

BERDYSHEV, G.D.

Nucleic acid synthesis in synchronous E. coli cultures. Izv. SO AN SSSR no.12 Ser. biol.-med. nauk no.3:151-153 '64. (MIRA 18:6)

1. Institut tsitologii i genetiki Sibirskogo otdeleniya AN SSSR, Novosibirsk.

TARASENKO, N.D.; BERDYSHEV, G.D.; LOPUSHONOK, V.Yu.

Free radicals in irradiated seed potatoes with different storage time. Biofizika 10 no.5:893-895 '65.

(MIR 18:10)

1. Institut tsitologii i genetiki Sibirskogo otdeleniya AN SSSR Novosibirsk.

BERDYSHEV, I. I.

"Insecticides From Turpentine," by I. I. Berdyshev and M. V. Gusakova, Gidroliznaya i Lesokhimicheskaya Promyshlennost', No 8, 1955, pp 14-15 (from Referativnyy Zhurnal Khimiya, No 12, Jun 56, p 263, Abstract No 36461)

"Chlorine derivatives of certain turpentine components were synthesized and tested for insecticidal activity. Chlorinated camphene (chlorophene) (I) and chlorinated pinene (chlorotene-2) (II) are highly active against Calandra granaria L. and Calandra oryzae L. (I) is a crystalline mass saturated with oil having a specific gravity of 1.65. It contains 65% chlorine and has a mild, pleasant odor of terpenes. (II) is a viscous liquid; specific gravity 1.54-1.56, n_D^{20} 1.55-1.60, chlorine content 55%. (I) and (II) were prepared by means of photochemical and dark chlorination; the photochemically prepared preparations were more active. Chlorinated Δ^3-carene, dipentene, sylvestrene dihydrochloride, and dispentene dihydrochloride are either totally inactive or very mildly active." (U)

BERDYSHEV, K.A.; SMIRNOV, B.I.

Automatic control of two-stage wet grinding. Biul. TSIICHM no.2:45 '61. (MIRA 14:9)
(Crushing machinery--Patents)

BERDYSHEV, N.

In Voronezh Province radio club. Radio no.2:10-11 F '54.
(MLRA 7:2)

1. Nachal'nik radiokluba Vsesoyuznogo dobrovol'nogo obshchestva sodeystviya armii, aviatsii i flotu (Voronezh).
(Voronezh Province--Radio clubs) (Radio clubs--Voronezh Province)

BERDYSHEV, N.

USSR/Electronics - Radio exhibitions

Card 1/1 Pub. 89 - 4/40

Authors : Berdyshev, N., Supervisor of the VORONEZH Regional DOSAAF Radio Club; Prokhorenkov, N., Supervisor of the KRASNODAR Radio Club; and Piskarev, A.

Title : Exhibits of radio-amateurs' creation

Periodical : Radio 10, 6-7, Oct 1954

Abstract : A number of radio-amateurs exhibits displayed at exhibitions held in Voronezh, Krasnodar, and Moscow (at the Moscow Electrotechnical Institute) are described. Illustration.

Institution: .....

Submitted: .....

FEDIN, A.A., kand.tekhn.nauk; BERDYSHEV, S.K., inzh.; KALASHNIKOV, A.V., inzh.; KUZNETSOVA, L.S., inzh.

Large aerated silicate blocks. Stroi. mat. 6 no.12:22-23 D '60. (MIRA 13:11)

(Sand-lime products)

SOLONETSKIY, V.; BERDYSHEV, V., inzh.

About a brochure on irrigation. Gidr. i mel. 15 no.12:59-60 D '63. (MIRA 17:2)

1. Zaveduyushchiy otdelom agrotekhniki Donetskoy ovoshche-kartofel'noy stantsii (for Solonetskiy).

30(1)

AUTHOR: Berdyshev, V. D., and Serbulov, A. F. (Kishinev) SOV/99-59-7-6/9

TITLE: Simplified Pump Station

PERIODICAL: Gidrotekhnika i Melioratsiya, 1959, Nr 7, pp 41-42 (USSR)

ABSTRACT: The pump stations used in Moldavia near the rivers are basically of two types: Those built on the river bank and those situated on pontoons. Because the water level in some rivers of this district undergoes considerable changes, the stations located at the riverside must be protected by a dam against the damage, which may be incurred during the period of river overflow. In this connection it has been established that the cost of protective dams or, in case of floating pump stations, the building of pontoons, represents the greatest part of expenditure for erection of pumping installations. In 1958 the Scientific Research Institute of Moldavia proposed a new type of pump station. The outstanding features of it are: 1) The pumping installation is divided into two separate units; 2) The first unit comprises the suction equipment consisting of a pump, electromotor

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and fan. This equipment is protected from the overflow by a round metal tank, 2.5 m high and 2.1 m in diameter. The motor and pump are mounted on the same frame. The tank is located directly at the riverside, but it is high enough to prevent penetration of water even when the river water level attains its highest point; 3) The second unit is situated in another building some distance away from the tank, at a site which never overflows. It connects the rest of pumping equipment and armature; 4) Both units are connected by a pipeline consisting of light, thinwalled pipes, which can be dismantled during the winter. The advanced features of this layout are its simplicity of construction and low cost of erection. There are 1 table and 1 photograph.

PETINOV, N.S., prof. (Moskva); BERDYSHEV, V.D., inzh. (Moskva)

Biological bases of irrigation farming. Gidr. i mel. 17 no.8:56-62 Ag '65. (MIRA 18:10)

BERDYSHEV, V.D.

Calculation of water permeability of soils based on vacuum capillarometric determinations. Pochvovedenie no.11:97-100 N '62. (MIRA 16:1)

1. Vsesoyuznyy gosudarstvennyy proyektno-izyskatel'skiy i nauchno-issledovatel'skiy institut Ministerstva sel'skogo khozyaystva.
(Soil percolation)

BERDYSHEV, V.D.

Auger for working in water-logged soils. Pochvovedenie no.9:103-104 S '59. (MIRA 13:1)

1.Moldavskiy institut oroshayemogo zemledeliya i ovoshchevodstva.
(Soils--Analysis)

ALEKSEYEV, V.M.; BERDYSHEV, V.D.; BOGOMOLOV, V.S.

Electrometric method of measuring the pressure gradient in determining the water permeability of soils. Pochvovedenie no.6:99-100 Je '60.
(MIRA 13:11)

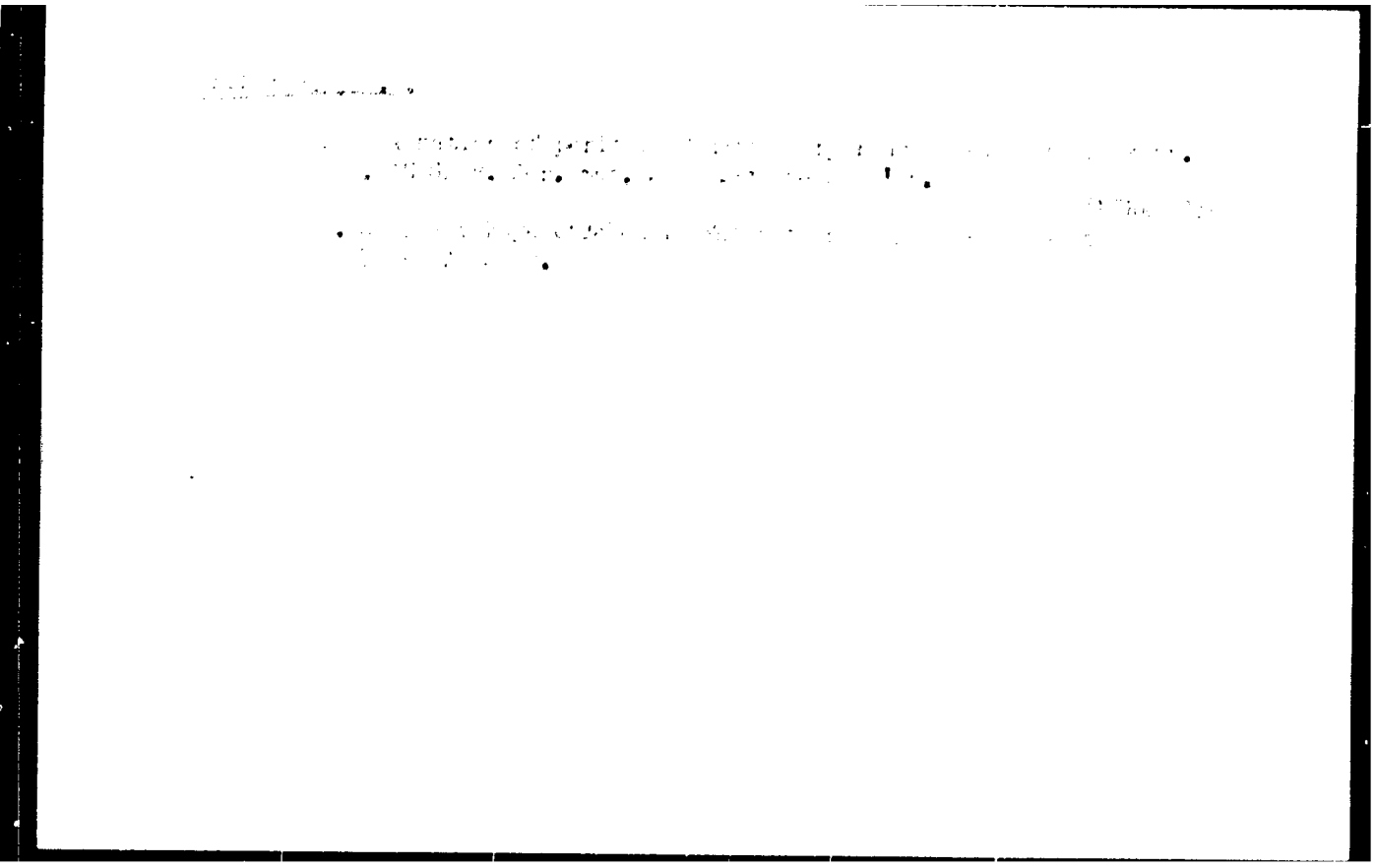
1. Voronezhskiy inshenerno-stroitel'nyy institut.
(Soil moisture)

BERDYSHEV, V.D., inzh. (Moskva); BOLOTOVA, N.F., inzh. (Moskva)

Improvement of meadows and pastures in the non-Chernozem belt of the U.S.S.R. Gidr. i mel. 17 no.12:49-57 D '65. (MIRA 19:1)

BERDYSHEV, V.D., inzh. (Moskva); DZYADEVICH, I.A. inzh. (Moskva)

Session of the All-Union Academy of Agricultural Sciences on irrigation farming in the European part of the U.S.S.R. Gidr. i mel. 17 no.1:52-60 Ja '65. (MIRA 18:4)



PUTINTSEVA, T.G.; BERDYSHEVA, L.V.

Identity of stimulating substances excreted from the heart in frogs under the effect of various cholinomimetics. Fiziol. zhur. 51 no.5:578-584 My '65. (MIRA 18:6)

1. Laboratoriya obshchey i sravnitel'noy fiziologii imeni Koshtoyantsa Instituta morfologii zhivotnykh imeni Severtsova AN SSSR, Moskva.

SHAMARINA, N.M.; BEROYSHEVA, L.V.; LARINA, V.N.; STASHKEVICH, I.S.

Interrelationship between innervation and contractile reaction of muscle fibers. Zhur. evol. biokhim. i fiziol. 1 no. 6: 507-515 N-D '65 (MIRA 19:1)

1. Laboratoriya neyrona i sinapsa Instituta vysshey nervnoy deyatel'nosti i neyrofiziologii AN SSSR, Moskva. Submitted April 26, 1965.

KARDYSHEVA, T.T., referent

Laboratory separator for strongly magnetic ores[from "Bergbauwissenschaften," no.6, 1960]. Biul. TSIICHM no.5:51 '61. (MIRA 14:10)
(Magnetic separation of ores)

BERDYSHEV, T.T., referent

Air-stream equipment for sieve testing [for "Bergbauwissenschaften," no.6, 1960]. Biul. TsIIOMM no.5:51 '61. (MIRA 14:10)
(Germany, West—Screens(Mining))

KABANOV, I.D., inzh.; BERDYUGIN, I.A., inzh.

Permissible power discrepancies of the cylinders of diesel-generators in parallel operation. Elek.sta. 32 no.6:47-49 Je '61. (MIRA 14:8)

(Diesel electric power plants)

BERDYUGIN, I.V., inzh.

Planograph of operations for stopes placed along the strike of the strata. Ugol' 40 no.2:65 F '65. (MIRA 18:4)

1. Shakhta "Severnaya" tresta Kemerovugol'.

BERDYUGIN, I.V., student

Temporary timbering in longwalls on medium depth beds. Bezop.truda v prom. 6 no.11:23 N '62. (MIRA 16:2)

1. Kemerovskiy gornyy institut.
(Mine timbering)

HERDYUGIN, V.

Kuznetsk Basin beacons. Sovshakht. 10 no.11:3 N '61. (MIRA 14:11)

1. Zamestitel' nachal'nika tekhanicheskogo upravleniya kombinata Kuzbassugol'. Sovshakht. 10 no.11:3 N '61. (MIRA 14:11)
(Kuznetsk Basin--Coal mines and mining--Technological innovations)

BERDYUGIN, V.

Important trend of technical progress. Sov. shakht. 11 no.9: 9-10 S '62. (MIRA 15:9)

1. Zamestitel' nachal'nika tekhnicheskogo upravleniya Kombinata ugol'nykh predpriyatiy Kuznetskogo kamennougol'nogo basseyna, sotrudnik neshtatnogo otdela redaktsii zhurnala "Sovetskiy shakhter" po Kemerovskoy oblasti.

(Kuznetsk Basin--Hydraulic mining)

BERDYUGIN, V., inzhener.

Portable metal loader hatch. Mast.ugl. 5 no.11:18 N '56.
(Coal mines and mining--Equipment and supplies) (MLRA 10:1)

KUGIN, V., inzhener.

Anchorless fastening of cables to shields. Mast.ugl. 6 no.6:12 Je '57. (MIRA 10:8)
(Coal mines and mining--Equipment and supplies)

GORSHKOV, G., tekhnik (Sverdlovsk); GRISHCHENKO, E. (Aktyubinsk); GRANOVSKIY, L., instruktor; IVANNIKOV, A.; BERDYUGIN, V., gornyy inzh.; KIL'DIBEKOV, V.; GORELIK, M., inzh.; ATKOCHAITIS, Ye. [Atkocaitis, E.] (Vil'nyus); CHERTILIN, V. (Bavly, Tatarskaya ASSR); DZHURAYEV, U.(Fergana)

Exchange of news and practice. Izobr.i rats. no.2:18-19 F '62. (MIRA 15:3)

1. Ural'skiy zavod tyazhelogo mashinostroyeniya (for Gorshkov). 2. Predsedatel' soveta Vsesoyuznogo obshchestva izobretateley i ratsionalizatorov remontno-mekhanicheskogo zavoda "Bol'shevik", g. Aktyubinsk (for Grishchenko). 3. TSentral'nyy Sovet Vsesoyuznogo obshchestva izobretateley i ratsionalizatorov (for Granovskiy). 4. Predsedatel' oblastnogo soveta Vsesoyuznogo obshchestva izobretateley i ratsionalizatorov (for Ivannikov). 5. Vneshtatnyy konsul'tant oblastnogo konsul'tatsionnogo punkta Vsesoyuznogo obshchestva izobretateley i ratsionalizatorov, g. Kemerovo (for Berdyugin). 6. Zaveduyushchiy otdelom promyshlennosti gazety "Leninskiy put'", g. Slobodskoy Kirovskoy obl. (for Kil'dibekov). 7. Otdel kapital'nogo stroitel'stva predpriyatiya teplovykh setey upravleniya energetiki Soveta narodnogo khozyaystva BSSR, g. Minsk (for Gorelik).

(Technological innovations)

BERDYUGIN, V.A., inzhener.

Protecting the ballast bed from erosion. Ugol' 31 no.10:36 O '56.
(Kuznetsk Basin--Mine railroads) (MLRA 9:11)

BERDYUGIN, V.A., inz. (Kemerovo)

New method of timbering crosscuts in shield pillars. Ugol' 32 no.9:40-41 S '57. (MIRA 10:10)
(Mine timbering)

BIRYUKOV, R.A., prof. (g.Kemerovo); BERDYUGIN, V.A., gornyy inzh. (g.Kemerovo)

"Efficient underground mining systems for working thick coal seams" by N.I.Lindenau. Reviewed by R.A.Biriukov, V.A.Berdiugin. Ugol' 35 no.9:64 S '50. (MIRA 13:10)
(Coal mines and mining) (Lindenau, N.I.)

BERDYUGIN, V.A., inzh.

Causes for the breakdown of piping in the "Krasnogorskaia" hydraulic mine. Bezop.truda v prom. 5 no.12:8-11 D '61. (MIRA 15:1)

1. Kombinat Kuzbassugol'.
(Kuznetsk Basin--Hydraulic mining--Safety measures)

BERDYUGIN, V.A., inzh.

Intensify the prevention of underground fires in Kuznetsk Basin mines. Bez.truda v prom. 6 no.1:4-6 Ja '62. (MIRA 15:1)

1. Tekhnicheskoye upravleniye kombinata Kuzbassugol'.
(Kuznetsk Basin--Mine fires--Safety measures)

GRAFOV, L.Ye., gornyy inzh.; GORBUSHIN, V.I., V.I.; ZARANKIN, N.Ye.; DUDNIK,G.N.; BARONSKIY, I.V.; KOSTYUKOVSKIY, V.Ya.[deceased]; LINDENAU, N.I.; BIRYUKOV, R.A.; LISKOVETS, A.R.; MURAV'YEV, V P.; FESUN, V.A.; BERDYUGIN, V.A.; BEREZNYAK, M.M.; VASIL'YEV, Ye.I.; KOLLODIY, K.K.; IL'CHENKO, D.F.; YALEVSKIY, D.B.; GERASIMOV, V.P.; IVANOV, V.V.; GAVRILOV, G.V.; SUROVA, V.A., red. izd-va; OSVAL'D, E.Ya., red. izd-va; PROZOROVSKAYA, V.L., tekhn. red.

[Develcpment and improvement in the technology of coal production] Razvitie i sovershenstvovanie tekhniki dobychi uglia. Moskva, Gosgortekhizdat, 1962. 359 p. (MIRA 16:2)
(Kuznets Basin--Coal mines and mining)

BERDYUGIN, V. A.

Temporary instructions for the design, construction, reception and operation of pipelines for hydraulic mines. Bezop. truda v prom. 6 no.9:39 S '62. (MIRA 16:4)

1. Zamestitel' nachal'nika tekhnicheskogo upravleniya po gidrodobyche Kombinata ugol'nykh predpriyatiy Kuznetskogo kamennougol'nogo basseyna.

(Hydraulic mining—Equipment and supplies)

KRYLOV, V.F.; BERDYUGIN, V.A.; LINDENAU, N.I.

Present status and development of complex mechanization in sloping longwalls in the Kuznetsk Basin. Ugol' 39 no.1:46-50 Ja '64. (MIRA 17:3)

1. Kombinat ugol'nykh predpriyatiy Kuznetskogo kamennougol'nogo basseyna (for Krylov, Berdyugin). 2. Vostochnyy nauchno-issledovatel'skiy institut po bezopasnosti rabot v gornoy promyshlennosti (for Lindenau).

BERDYUGIN, V.A.; BUSHUYEV, A.P.

New success of the A. IA. Khmelev mining brigade at the "Polysaevskaia-2" mine of communist labor. Ugol' 39 no.5: 32-33 My '64. (MIRA 17:8)

1. Zamestitel' nachal'nika tekhnicheskogo upravleniya kombinata Kuzbassugol' (for Berdyugin). 2. Nachal'nik uchastka No.2 shakhty "Polysayevskaya-2", Kuzbass (for Bushuyev).

BERDYUGIN, V.A.

Mining 46,585 tons of coal in 31 workdays, a new record of mining with the help of the OMKT equipment. Ugol' 40 no.8:74 Ag '65. (MIRA 18:8)

1. Kombinat Kuzbassugol'.

BERDYUK, G.P., kand. tekhn. nauk, nauchn. sotr., red.;
[illegible], T.P., red.

[Controlling the heavings of railroads and roads; transactions of a conference held at Novosibirsk in October 1963] Bor'ba s puchinami na zheleznykh i avtomobil'nykh dorogakh; trudy soveshchaniia, provedennogo v g. Novosibirske v oktiabre 1963 g. Moskva, Transport, 1965. 214 p. (MIRA 18:4)

1. Russia (1923- U.S.S.R.) Ministerstvo putey sooobshcheniya. Komitet po zemlyanomu polotnu. 2. Sibirskiy nauchno-issledovatel'skiy institut energetiki (for Berdyuk).

BERDYUK, I.V., klinicheskiy ordinator.

Nitrous oxide in ambulatory operative dentistry. Stomatologiia no.4: 26-28 Jl-Ag '55. (MLRA8:10)

1. Iz chelyustno-litsevoy kliniki (zav.--doktor meditsinskikh nauk prof. B.E.Frankenberg) Odesskogo nauchno-issledovatel'skogo stomatologicheskogo instituta (dir.--kandidat meditsinskikh nauk M.N. Kukhareva)

(DENTISTRY, OPERATIVE, anesthesia and analgesia, nitrous oxide in ambulatory practice)
(NITROUS OXIDE, in anesthesia & analgesia, dent. in ambulatory practice)
(ANESTHESIA, INHALATION, nitrous oxide, in dent.)

BERDYUK, I.V.

Method for the correction of the nose in congenital fissure of the upper lip by means of tissues of the concha nasalis inferior. Vrach.delo no.1:85 '60. (MIRA 13:6)

1. Kafedra stomatologii (zav. - doktor med.nauk Ye.I. Gavrilov) Zaporozhskogo instituta usovershenstvovaniya vrachey.
(NOSE--SURGERY) (HARELIP)

BERDYUK, I.V., assistent

Planning operations for cheiloplasty in congenital fissures of the upper lip. Stomatologiia 39 no.6:37-41 N-D '60. (MIRA 15:1)

1. Iz kafedry stomatologii (zav. - doktor med. nauk Ye.I.Gavrilov) Zaporozhskogo instituta usovershenstvovaniya vrachey imeni M.Gor'kogo (dir. - dotsent V.T.Karpukhin).
(LIPS--SURGERY)

BERDYUK, I.V., assistant

Elongation of the palate and stenosis of the pharynx in repeated uranoplasty. Stomatologiia 40 no.3:36-39 My-Je '61. (MIRA 14:12)

1. Iz kafedry stomatologii (zav. - prof. Ye.I.Gavrilov) Zaporozhskogo instituta usovershenstvovaniya vrachey (dir. - dotsent V.T.Karpukhin).
(PALATE--SURGERY) (PHARYNX--SURGERY)

BERDYUK, I.V. (Zaporozh'ye)

Prevention and correction of deformities following surgery for congenital fissures of the lips and nose. Probl.sion. 6:356-360 '62. (MIRA 16:3)

(HARELIP) (NOSE—ABNORMITIES AND DEFORMITIES)

BERDYUK, I.V., assistent

Two-stage uranoplasty. Stomatologiia 41 no.5:50-53 S-O '62. (MIRA 16:4)

1. Iz kafedry stomatologii Zaporozhskogo instituta usovershenstvovaniya vrachey imeni M.Gor'kogo.
(PALATE--SURGERY)

BERDYUK, V.V., inzh.

Working frozen soils with a cutting machine. Stroi. truboprov. 6 no.3:23 '61. (MIRA 14:3)

1. Trest Vostoknefteprovodstroy, g.Ufa.
(Frozen ground) (Pipelines)

BERDYUK, V.V., inzh.

Use of precast reinforced concrete in the construction of main pipelines. Stroi. truboprov. 7 no.7:5-6 Jl '62. (MIRA 15:7)

1. Trest Vostoknefteprovodstroy, Ufa.
(Precast concrete construction)
(Pipelines—Buildings and structures)

BERDYUK, V.V.; BORODAVKIN, P.P.

Classification of swamps as applied to pipeline construction. Stroi. truboprov. 10 no.1:31-32 Ja '65. (MIRA 18:4)

1. Trest Vostoknefteprovodstroy, Ufa (for Berdyuk). 2. Ufimskiy neftyanoy institut (for Borodavkin).

BR

ACCESSION NR: AT4027403 S/3086/63/000/004/0123/0127

AUTHOR: Berdy*kulov, Kh.

TITLE: Photosynthesis of Chlorella vulgaris Beyer in open-tank mass culture in Uzbekistan

SOURCE: AN UzbSSR. Otd. biol. nauk. Voprosy* biologii i krayevoy meditsiny*, no. 4, 1963, 123-127

TOPIC TAGS: Chlorella vulgaris Beyer, photosynthesis mechanism, Chlorella vulgaris, daytime photosynthesis rate

ABSTRACT: Studies of the mass culture of Chlorella vulgaris Beyer have been conducted at the Institut botaniki AN UzSSR (Botanical Institute, AN Uzbek SSR) under the direction of A. M. Muzafarov since 1957. In 1962, experiments were carried out with Chlorella vulgaris suspensions containing 5 million cells per milliliter to determine 1) the mechanism of photosynthesis during daytime, 2) the rate of photosynthesis in relation to the density of the suspension (number of cells per milliliter) and to the layer thickness, and 3) the effect of carbon dioxide

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ACCESSION NR: AT4027403

concentration in the air bubbled through the suspension. The experiments on daytime photosynthesis were conducted from 0700 to 1900 hours, and the data were recorded every three hours. The highest rate was observed at 1300 hours, amounting to 0.04 mg O_2/mg Chlorella. The data obtained indicate that increasing the thickness of the suspension layer from 5 to 15 cm decreased the rate of photosynthesis 20—92% compared to that on the surface. No photosynthesis was observed at a layer thickness of 20 cm. Air bubbled through the suspension containing 1—10% CO_2 activated the photosynthesis of Chlorella. The highest rate was obtained with 1% CO_2; additional amounts of CO_2 only slightly increased the rate of photosynthesis. Orig. art. has: 2 tables and 1 figure.

ASSOCIATION: none

SUBMITTED: 00 DATE ACQ: 16Apr64 ENCL: 00

SUB CODE: AM NO REF SOV: 008 OTHER: 001

Card 2/2

BERDYKULOV, Kh.

Photosynthesis of Chlorella vulgaris Beyer in mass cultivation in the open basins of Uzbekistan. Vop. biol. i kraev. med. no.4:123-127 '63. (MIRA 17:2)

BERDYUKOVA, M.D.; INOSOVA, K.I.; ISHCHENKO, A.M.[deceased]; KOLOMEYTSEVA, A.K.; LIFSHITS, M.M.; PAZUKHINA, D.K.; SHARAYEVA, L.N.; SHIROKOV, A.Z.; VAL'TS, I.E., red.; STRUYEV, M.I., red.; NIKOLAYEVA, I.N., red.

[Atlas of the lower Carboniferous coals of the Donets Basin] Atlas uglei nizhnego karbona Donetskogo basseina. [By] M.D. Berdiukova i dr. Moskva, Nauka, 1964. 101 p. (MIRA 18:4)

BEPDYYEV, Ate (D)

"Absorption of Ultrasonic Waves in Liquids." Sub 21 Feb 51, Moscow Order of Lenin State U imeni M.V. Lomonosov.
Cand. Physico - Mathematical Sci.
Dissertations presented for science and engineering degrees in Moscow during 1951.

SO: Sum. No. 480, 9 May 55.

BERDYYEV, A. A.

"Absorption of Ultrasound at Critical Temperature of Solution," Izv. AN Turkm. SSR. No 3, 1954, pp 82-84

Absorption of ultrasonic waves by the mixture methyl alcohol-hexane, having a critical dissolving temperature of 42.7°C, was measured by optical means. The absorption coefficient was found to rise with approach to the critical temperature, surging rapidly at critical temperature. At higher temperatures, the two-phase system becomes single-phased, and the absorption coefficient drops sharply. It is stated that the high absorption in the range of the critical temperature is bound to a change in molecular structure of the solution.

RZhFiz, No 3, 1955

BERDYYEV, A.A.

SYUZYAYEV, V.I.; BERDYYEV, A.A.

Studying the velocity of ultrasonic dispersion in systems containing chloral. Izv. AN Turk. SSR no.6:9-15 '57. (MIRA 11:1)

1. Institut fiziki i geofiziki AN Turkmenskoy SSR i Turkmenskiy gosudarstvennyy universitet im. A.M. Gor'kogo.
(Ultrasonic testing) (Chloral) (Systems (Chemistry))

BERDYYEV, A.

SYUZYAYEV, V.I.; BERDYYEV, A.A.; KOLANDO, N.I.

Surface tension of some binary systems containing chloral. Izv. AN Turk. SSR no.6:81-84 '57. (MIRA 11:1)

1. Institut fiziki i geofiziki AN Turkmenskoy SSR.
(Chloral) (Surface tension) (Systems (Chemistry))

BERDYYEV, A.A.; SHIRDZHANOV, N.; VASIL'YEVA, M.G.

Results of investigating the absorption of ultrasonic waves in certain liquids and mixtures. Trudy Inst.fiz.i geofiz.AN Turk. SSR 5:137-145 '58. (MIRA 13:6)
(Ultrasonic testing)
(Xylene)
(Benzene)

B 058/61/000/008/043/044
A058/A101

24,1800

AUTHORS: Berdyyev, A. A., Lezhnev, N. B.

TITLE: Investigation of absorption of ultrasonic waves at high frequencies

PERIODICAL: Referativnyy zhurnal, Fizika, no. 8, 1961, 348, abstract 8Zh587 ("Izv. AN TurkmSSR. Ser. fiz.-tekhn., khim. i geol. n.", no. 6, 1960, 127-130)

TEXT: The authors describe the block diagram and electric circuit of a setup for measuring absorption of ultrasonic waves in liquids in the frequency range 5 - 200 Mc. On this setup one can measure the temperature dependences of the absorption and of the velocity. The measurement range for attenuation was 0.2 - 4,000 db/cm. The measurement error of ultrasonic absorption and velocity does not exceed 3% and 0.5%, respectively.

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D. L.

[Abstracter's note: Complete translation]

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D207/D301

AUTHORS: Berdyyev, A.A., and Vasil'yeva, M.G.

TITLE: Absorption of high-frequency ultrasonic waves in viscous liquids

PERIODICAL: Akademiya nauk Turkmenskoy SSR. Izvestiya. Seriya fiziko-tekhnicheskikh, khimicheskikh i geologicheskikh nauk, no. 2, 1962, 3 - 12

TEXT: Absorption of 16-159 Mc/s ultrasound was investigated in glycerin, caster oil, cotton seed oil, transformer oil, spindle oil '2', 'CY' ('SU') oil. Absorption was measured with the apparatus described earlier by A.A. Berdyyev and N.B. Lezhnev, viscosity with a capillary viscometer, density with a pyknometer. Temperature was kept constant with a thermostat U-8. Glycerin was investigated in the 19-60°C range at 27-159 Mc/s and the ultrasound absorption in it was found to obey the Stokes' law only up to 1.9 poise; at higher viscosities (lower temperatures) relaxation phenomena produced departures from the Stokes law. The shear and volume (bulk) vis-

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cosities of glycerin were of the same order: several poises at 30-60°C. In the oils the ultrasound absorption coefficient (α) did not obey the Stokes law at all, i.e. departures from $\alpha = f(\omega^2)$ were observed (here ω is the angular frequency of the ultrasonic vibrations). In all six liquids the absorption of ultrasound was affected both by shear and volume viscosities. There are 13 figures, 1 table and 9 references: 6 Soviet-bloc and 3 non-Soviet-bloc. The references to the English-language publications read as follows: T.A. Zitovitz, J. Acoust. Soc. Am., 23, no. 1, 1951; C.S. Venkatesvaran, Proc. Ind. Acad. Sci., A 15, 1942; B.J. Wuench, T.F. Hueter, and M. S. Cohen, J. Acoust. Soc. Am., 18, no. 2, 1956.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN Turkmenskoy SSR (Physico-Technical Institute, Academy of Sciences, of the Turkmenian SSR)

SUBMITTED: November 10, 1961

BERDYYEV, A.A.; GOLOVKOVA, L.I.; KARAKHANOV, Ya.

Determining zirconium and yttrium by spectrum analysis.
Trudy fiz.-tekh. inst. AN Turk. SSR 8:5-18 '62.
(MIRA 15:11)

(Spectrum analysis)
(Zirconium) (Yttrium)